

We believe, based on their size, that these crabs will mature this fall, when they will migrate to brackish and saltwater to reproduce.

As of the last week of March 1998, the known distribution of the mitten crab extends north up the Sutter Bypass to Meridian, east up Little John Creek to Farmington and Mormon Slough to the Calaveras River, and south up the San Joaquin River near Vernalis. Although large numbers of downstream migrating adults have been documented in the delta and elsewhere in the estuary, this is the first time we have seen mass upstream migrations of juveniles from the delta. Although we do not know what cues these migrations, we hypothesize that increased outflow and overcrowded rearing areas may be important factors.

### San Francisco Bay Fisheries Monitoring

Kathy Hieb

As expected, catches of fishes, shrimp, and Cancer crabs decreased dramatically in San Francisco Bay this winter in response to increased freshwater outflow and decreased salinities. This was most notable for marine pelagic species, such as northern anchovy and Pacific sardine, which emigrate from the bay more readily than demersal species when salinities decrease. Demersal species tend to move from the shoals to the channels before emigrating from the bay, as bottom salinities are higher in the channels than over the shoals. For example, in February and March 1998, bottom salinities ranged from 0.9 to 5.0‰ at our San Pablo Bay shoal stations, but ranged from 17.2 to 20.0‰ at our San Pablo Bay channel stations. Consequently, catches at the San Pablo Bay shoal stations were dominated by striped bass, yellowfin goby, and starry flounder, which are typically found in brackish water, while catches at the San Pablo Bay channel stations were dominated by Dungeness crab, Pacific tomcod, bay goby, and speckled sanddab, which are found at higher salinities.

Catches of several marine pelagic species did increase this winter, including night smelt and whitebait smelt (both osmerids) and topsmelt (an atherinid). Our catches of night and whitebait smelts typically increase in winter, when these species migrate to nearshore coastal areas, including bays, to spawn. Topsmelt are resident in the Bay and typically found in South Bay intertidal and shallow subtidal habitats year-round, but will migrate to open water areas in winter, especially after storms. Increased topsmelt catches during winter 1998 reflected fish migrating from these very shallow habitats, which our survey does not sample, to open water areas, which we

do sample, rather than an increase in the bay's topsmelt population.

Our catches of Pacific sanddab, a demersal marine species, increased dramatically this winter. From January through March 1998, we collected 96 Pacific sanddabs; in contrast, from 1980 to 1996, we collected a total of 26 Pacific sanddabs. The fish collected in 1998 were from 113 to 242 mm and, based on lengths, most were 2 to 3 years old. It is likely the increased Pacific sanddab catches were related to the strong El Niño event - 11 of the 26 previously collected fish were from January through April 1983, when there was a very strong El Niño, while the remaining Pacific sanddab catches tended to be in years with weaker El Niño events.

We continued to collect the recently introduced goby, *Tridentiger barbatus*, in lower San Pablo Bay this winter. Two fish, 25 and 39 mm, were collected at one station in February, while 5 fish, ranging from 48 to 61 mm, were collected at one station in March. For more information about our newest resident, please see Kevin Fleming's article in the previous issue of the IEP Newsletter.

### Herbicide Concentrations and Effects on Phytoplankton

Jody Edmunds, Kathy Kuivila, and Jim Cloern

The Contaminant Effects Team is examining the potential effects of herbicides in the Delta on phytoplankton photosynthesis and primary productivity in the Delta. The project will take two years to complete with funding from the USGS and IEP.

The field sampling has been completed (sampling ended November 13, 1997) and data are being analyzed. Chemical analyses have been completed for herbicide concentrations, phytoplankton biomass (chlorophyll *a*), phytoplankton photosynthesis, and basic water quality measurements (turbidity, temperature, specific conductivity, alkalinity, dissolved nutrients, and dissolved organic carbon). Phytoplankton species composition analyses are not yet finished.

### Juvenile Salmonid Monitoring Program

Erin Sauls

Midwater trawling at Chipps Island captured 64 winter-run sized chinook salmon from January 1 through March 25 with the peak numbers in late March. Two peaks of fall-run sized salmon were seen at Chipps Island; one in mid-January and the other in early March. Delta smelt take has not limited our sampling this year although catch increased in late March.

In response to high outflows, we beach seined in San Francisco Bay Estuary to see if salmon were using the bay as a rearing area. Sampling was done once in late January and twice a month in February and March around San Pablo Bay and Suisun Bay. A total of 105 fall-run sized salmon was captured in this effort. No other race of salmon was captured in the bay.

Our other beach seining efforts on the Sacramento River, San Joaquin River, and delta captured 91 winter-run sized chinook. Most of these fish were captured near the city of Sacramento. It's difficult to compare these numbers to last winters' (1996-97) because our sampling was restricted in winter 1996-97 due to very high flows.

Between March 16-20, we conducted an experimental comparison between a one boat Kodiak trawl and a two boat Kodiak trawl near Sacramento. The single boat trawl uses the same net, but a different door design to keep it open. Preliminary results indicate similar raw catch numbers for chinook salmon between the two methods, but further analysis is needed. If the gears are comparable, the one boat gear obviously requires less staff and is thus more cost effective. Some safety concerns need to be considered before any further use of this modified kodiak trawl.

Our new Access database is up and running well. We have been entering our current field season data on a real-time basis and will continue processing data in this fashion for the IEP real-time monitoring effort. Our

historical databases are being loaded into Access and updated with information from the field sheets not previously entered because of dBASE IV limitations. Eventually the data will be available on the IEP homepage.

### Central Valley Salmon Team

Randall Brown

The Salmon Team met last on March 24, 1998. Among other things, team members agreed to develop a conceptual model of the life history of a Sacramento Valley fall chinook stock. The working model, to be completed by June 1, 1998, will be used by the team and CALFED to help determine the longterm monitoring and research priorities for Central Valley salmonids.

The team also heard a presentation by a representative of Northwest Marine Technology - a State of Washington firm which will receive a \$600,000 CALFED grant to demonstrate mass marking of juvenile salmonids. Their patented equipment clips the adipose fins and inserts a coded wire tag into the noses of about 120 young salmon per minute. The tagging part of the operation is working about as well as planned, but more development is required for the presorting equipment. (Best results are obtained when individual batches of fish vary no more than about 10 mm from smallest to largest.) The company expects to have the technology completely operational in time for the 1999 brood year.

## Status and Trends

### Introduction

Randall Brown, DWR

This is the third annual status and trends issue of the Interagency Program *Newsletter*. As with the past status and trends issues, we hope you find it a handy and useful resource when looking for information about a variety of species and environmental parameters associated with the Sacramento/San Joaquin estuary.

Knowledge of the status and trends in abundance of key species and their supporting foodwebs is an essential component of Central Valley and estuarine restoration activities. Several programs are developing projects to "fix the delta" and its watershed, and an integral component of these program is a yardstick by which success can be measured. Although this brief summary is not intended

to be the definitive measuring tool, it can provide a general sense of how well the system is doing.

The species and parameters covered in the status and trends issue varies from year to year. For example, the CALFED program just published its long-awaited draft proposals for the delta, including a list of indicator species; this issue presents a conceptual framework for indicator development used by CALFED.

We are always looking for feedback from agency staff and stakeholders on species or key parameters. Feedback can be either to any of the coordinators or management team members or directly to me: rbrown@water.ca.gov; 916/227-7531 voice; or 916/227-7554 fax.